

GHS Classification

ID418

2,3-Dinitrotoluene

CAS 602-01-7

Date Classified: Aug. 22, 2006 (Environmental Hazards: Mar. 31, 2006)

Physical Hazards

Reference Manual: GHS Classification Manual (Feb. 10, 2006)

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Explosives	Not classified	—	—	—	Because of a lack of data on the kick-off temperature and decomposition energy (though the substance contains nitro groups, with its oxygen budget calculated at -114). Classified into Division 6.1 (UN#3454 Dinitrotoluene (solid) and UN#1600 Dinitrotoluene (molten)) (UN Recommendations on the Transport of Dangerous Goods).
2 Flammable gases	Not applicable	—	—	—	Classified as "solid" according to GHS definition
3 Flammable aerosols	Not applicable	—	—	—	Not aerosol products
4 Oxidizing gases	Not applicable	—	—	—	Classified as "solid" according to GHS definition
5 Gases under pressure	Not applicable	—	—	—	Classified as "solid" according to GHS definition
6 Flammable liquids	Not applicable	—	—	—	Classified as "solid" according to GHS definition
7 Flammable solids	Not classified	—	—	—	Classification not possible due to lack of data, though classified as flammable according to ICSC (2004). Classified into Division 6.1 (UN#3454 Dinitrotoluene (solid) and UN#1600 Dinitrotoluene (molten)) (UN Recommendations on the Transport of Dangerous Goods).
8 Self-reactive substances and mixtures	Not classified	—	—	—	No data available, though the substance contains nitro groups with explosive properties. Classified into Division 6.1 (UN#3454 Dinitrotoluene (solid) and 1600 Dinitrotoluene (molten)) (UN Recommendations on the Transport of Dangerous Goods).
9 Pyrophoric liquids	Not applicable	—	—	—	Classified as "solid" according to GHS definition
10 Pyrophoric solids	Not classified	—	—	—	Classified into Division 6.1 (UN#3454 Dinitrotoluene (solid) and 1600 Dinitrotoluene (molten)) (UN Recommendations on the Transport of Dangerous Goods).
11 Self-heating substances and mixtures	Classification not possible	—	—	—	Test methods applicable to liquid substances are not available (melting point: 59-61degC (ICSC, 1999), test temperature: 140degC).
12 Substances and mixtures, which in contact with water, emit flammable gases	Not applicable	—	—	—	Containing no metals or metalloids (B, Si, P, Ge, As, Se, Sn, Sb, Te, Bi, Po, At)
13 Oxidizing liquids	Not applicable	—	—	—	Classified as "solid" according to GHS definition
14 Oxidizing solids	Not classified	—	—	—	No data available, though being organic compounds containing oxygen bound to elements other than carbon and hydrogen. Classified into Division 6.1 (UN#3454 Dinitrotoluene (solid) and 1600 Dinitrotoluene (molten)) (UN Recommendations on the Transport of Dangerous Goods).
15 Organic peroxides	Not applicable	—	—	—	Organic compounds containing no "-O-O-" structure
16 Corrosive to metals	Classification not possible	—	—	—	Test methods applicable to solid substances are not available

Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Category 4	Exclamation mark	Warning	Harmful if swallowed	Based on the LD50 value of 935mg/kg calculated from the testing data of rat LD50 (oral route) of 911mg/kg, 1,112mg/kg and 1,102mg/kg (DFGOT vol.6 (1994)).
1 Acute toxicity (dermal)	Classification not possible	—	—	—	No data available
1 Acute toxicity (inhalation: gas)	Not applicable	—	—	—	Due to the fact that the substance is "solid" according to the GHS definition and inhalation of its gas is not expected.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	—	—	—	No data available
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	—	—	—	No data available
2 Skin corrosion / irritation	Classification not possible	—	—	—	No data available. As for the health hazards, refer to "ID413, Dinitrotoluene, CAS: 25321-14-6."
3 Serious eye damage / eye irritation	Classification not possible	—	—	—	No data available As for the health hazards, refer to "ID413, Dinitrotoluene, CAS: 25321-14-6."
4 Respiratory/skin sensitization	Respiratory sensitization: Classification not possible Skin sensitization: Classification not possible	(Respiratory sensitization) — (Skin sensitization) —	(Respiratory sensitization) — (Skin sensitization) —	(Respiratory sensitization) — (Skin sensitization) —	Respiratory sensitization: No data available Skin sensitization: Insufficient data available
5 Germ cell mutagenicity	Classification not possible	—	—	—	Based on the absence of data on multi-generation mutagenicity tests, germ/somatic cell mutagenicity tests in vivo and germ/somatic cell genotoxicity tests in vivo, and no positive data on mutagenicity tests in vitro (several indices), described in NTP DB (Access on April 2006).
6 Carcinogenicity	Classification not possible	—	—	—	No data available As for the health hazards, refer to "ID413, Dinitrotoluene, CAS: 25321-14-6."
7 Toxic to reproduction	Classification not possible	—	—	—	No data available As for the health hazards, refer to "ID413, Dinitrotoluene, CAS: 25321-14-6."
8 Specific target organs/systemic toxicity following single exposure	Category 2 (central nervous system, cardiovascular system, blood system) Category 3 (narcotic effects)	Health hazard	Warning	May cause damage to organs (central nervous system, cardiovascular system, blood system) (Narcotic effects) May cause drowsiness or dizziness	Based on the human evidence: "adversely affects the central nervous system, cardiovascular system and blood, and may produce methemoglobin" (ICSC (J) (1997)). Also based on the evidence from animal studies including "somnolency" (RTECS (2006)). Refer to "Dinitrotoluene (CAS, 25321-14-6)."

9	Specific target organs/systemic toxicity following repeated exposure	Category 2 (central nervous system, cardiovascular system, blood system)	Health hazard	Warning	May cause damage to organs through prolonged or repeated exposure (central nervous system, cardiovascular system, blood system)	Based on the human evidence: "adversely affects the central nervous system, cardiovascular system and blood, and may produce methemoglobin" (ICSC (J) (1997)). Refer to "Dinitrotoluene (CAS_25321-14-6)."
10	Aspiration hazard	Classification not possible	—	—	—	No data available

Environmental Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
11 Hazardous to the aquatic environment (acute)	Category 1	Environment	Warning	Very toxic to aquatic life	It was classified into Category 1 from 96 hours LC50=0.33mg/L of the fish (Bluegill) (CERI/NITE Hazard Assessment Report, 2004).
11 Hazardous to the aquatic environment (chronic)	Category 1	Environment	Warning	Very toxic to aquatic life with long lasting effects	Although acute toxicity is Category 1 and bio-accumulation is low (log Kow=2.18(PHYSPROP Database, 2005)), since there was no rapidly degrading (the decomposition by BOD: 0%(CERI/NITE Hazard Assessment Report, 2004)), it was classified into Category 1.